$$= \frac{1}{a^2\sqrt{2}}\left[\frac{x\sqrt{(x^2+a^2)}}{2} + \frac{a^2\log[x+\sqrt{(x^2+a^2)}]}{2}\right]_0^a = \frac{1}{2}\left[1 + \frac{\log(\sqrt{2}+1)}{\sqrt{2}}\right].$$

O. W. Anthony gets as a result $\frac{2}{\pi}$. Professor *MATZ* furnished two solutions.

22. Proposed by ALTON L. SMITH, Instructor in Drawing, Polytechnic Institute, Worcester, Massachusetts.

In a series of counts of the votes on a legislative act relative to the city of Worcester, the following results were obtained:

	YES	NO
1st count	5566	5511
2nd "	5519	5558
3rd "	5546	5517
4th "	5512	5551
5th "	5512	5541

What is the probabilitv that the last count (the 5th) is correct?

Solution by F. P. MATZ, M. Sc., Ph. D., Professor of Mathematics and Astronomy in New Windsor, College, New Windsor, Maryland.

I. Since the counts taken independently must be either correct or incorrect the probability that the fifth count is *incorrect* is

$P'_5 = \frac{1}{2} / (\frac{1}{2}+\frac{1}{2}+\frac{1}{2}+\frac{1}{2}+\frac{1}{2}) = \frac{1}{5}$. Hence the probability that the fifth count is *correct* is $P_5 = 1 - P_5' = \frac{4}{5}$.

II. According to *The Law of Experience*, the second count should show a *greater* probability as to correctness and a *smaller* probability as to incorrectness than the first count shows; that is, the probability as to the correctness of the fifth count should be greater than is the *similar* probability with respect to any other count *lower* than the fifth. This Law, according to the notation adopted, gives $P_1' = \frac{1}{2}, P_2' = \frac{1}{4}, \ldots, P_5' = \frac{1}{32} = (\frac{1}{2})^5$. Hence $P_5 = 1 - (\frac{1}{2})^5 = \frac{31}{32}$, which is the probability that the fifth count is correct.

PROBLEMS.

29. Proposed by JOHN DOLMAN, Jr., Philadelphia, Pennsylvania.

Neglecting perturbations, what is the average distance of the earth from the sun?

30. Proposed by F. P. MATZ, M. A., M, Sc., Ph. D., Professor of Mathematics and Astronomy in New Windsor College, New Windsor, Maryland.

Find the average area of all the triangles that can be inscribed in a given circle.